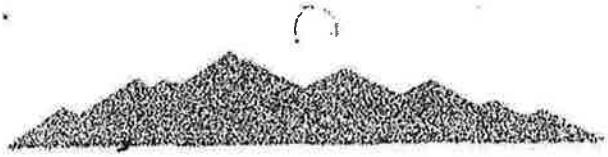

# INTERMOUNTAIN POWER SERVICE CORPORATION

February 16, 2005

Mr. Richard Sprott, Director
Utah Division of Air Quality
Department of Environmental Quality
150 North 1950 West
P.O. Box 144820
Salt Lake City, UT 84114-4820

Attention: Milka Radulovic, Review Engineer, NSR Section

Dear Mr. Sprott:

**Coal-Derived Synthetic Fuel at Intermountain Generating Station**

On October 19, 2004, Intermountain Power Service Corporation (IPSC) submitted a request to allow the use of coal-derived synthetic fuel (synfuel) at the Intermountain Generating Station (IGS) in Delta. The IGS is a coal fired steam-electric plant located in Millard County, which is currently permitted to burn bituminous coal, subbituminous coal, fuel oil, used oil, and natural gas. IPSC is proposing to add synfuel to our fuel portfolio to enhance reliability and lower operating costs.

Over the past several months, IPSC staff along with your staff have been researching emission aspects of synfuel. Along with the research, we have also reviewed options to allow the use of synfuel at IGS with and without permitting. IPSC is providing additional information and recommendations regarding synfuel.

**Overview**

In addition to the information provided with the October 19, 2004 letter, we have found other sources with supportive data indicating that synfuel would not increase emissions over untreated coal. We can not find instances outside of Utah where permits were required for the use of synfuel within an existing coal portfolio, although approval was sought and granted outside of agency permitting processes. Information referred to in the following discussions are already on file with UDAQ staff[1].

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[1]See "Environmental Issues Associated with the Use of Coal-Derived Synfuel at Georgia Power Company, Volume 2: Latex Binder Synfuel", by Larry S Monroe; "Reagent Characterization and Bench-Scale Combustion Testing" by N.S. Harding; USEPA IV letter to Abrams from Worley, 1/29/04; IPSC letter to UDAQ, 10/19/04.

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**Synfuel Combustion Characteristics by Component**

Synfuel is a chemically altered coal made by binding base coal with a latex emulsion. The base coal is currently permitted for use at IGS. The latex emulsion is similar to products already in use at IGS for fugitive dust control from coal transfer activities. The reactant rate is two pounds of latex per ton of coal. Synfuel is manufactured off-site by third party vendors and transferred to IGS via normal modes of transportation.

Emissions due to the coal component of synfuel are well documented either by testing or reference[2]. In analyzing the latex portion of synfuel, we found that latex is a cleaner, lighter fuel than coal. As with any fuel, latex will burn clean in well controlled combustion such as that found in utility boilers. Latex as a fuel has higher hydrogen and heating value content than coal and displaces more coal by weight than latex used for the same energy output. Latex also contains lower ash and concentrations of other compounds. Reacting latex with coal and burning the resultant synfuel theoretically requires slightly less fuel flow than coal alone, with equal or better environmental consequence. However, the dried latex makes up only 0.1 percent by weight of the synfuel, actual differences from the 99.9 percent base coal emission characteristics would be inconsequential and likely buried within the natural variability of coal quality.

**Specific Emission Characteristics**

Sulfur Dioxide
Sulfur content of the latex binder is almost undetectable, whereas sulfur concentrations of the base coal has averaged over 0.50 percent by weight. Therefore, increases in sulfur dioxide emissions are not possible when utilizing synfuel.

Nitrogen Oxides
Because of the different ways that nitrogen oxides (NOx) are formed, NOx emissions are more difficult to predict. Essentially, NOx mainly comes from the conversion of either atmospheric nitrogen or fuel bound nitrogen to oxides. Latex is cleaner than coal with regard to fuel bound nitrogen, where the nitrogen content is much lower than that of coal. The predominant source of fuel bound nitrogen in synfuel comes from the coal, which can average over 1 percent in concentration.

Conversion of atmospheric nitrogen is more problematic to predict and is reliant upon combustion parameters such as flame temperature, residence time, and rate of burn of the fuel. Test burns by others of synfuel, which were compared against base coal burns have shown no difference in NOx generation.

Particulate Matter
Because latex has less than 1 percent ash and coal is 10 percent ash, the resulting total ash in synfuel will be less than coal alone when compared for the same heat input rate. Other testing has also shown that from a mass emissions standpoint, ash from base coal and synfuel was indistinguishable, making no difference in pollution control efficiency for particulates.

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[2]ID. Also Covol product literature by Headwaters; discussion on Southern Research Institute testing; product Material Data Safety Sheets.

Volatile Organic Carbons

VOC emissions are influenced more by the combustion process than fuel characteristics. The efficiency of a well operated utility boiler will not be influenced by the introduction of synfuel as a substitute to base coal. VOC emissions are not predicted to change due to changes in the combustion process. Actual testing by others have shown that synfuel formulations had lower VOC emissions that the parent coals.

The minor impact to VOC formation that could come from fuel characteristics also can be shown to favor synfuel. Higher hydrogen content of synfuel (due to the latex) tends to cause the fuel to produce less VOC than the base coal.

Sulfuric Acid

As already discussed, the addition of latex to coal reduces the sulfur content of the resulting synfuel. Sulfuric acid emissions result from a small portion of sulfur dioxide that oxidizes further to sulfur trioxide, which then mixes with water to form acid. The critical components present that influence further oxidation of $SO_2$ is the catalytic effect of fly ash and hot metallic surfaces of the flue path. Nothing in the synfuel provides any new chemical or physical pathway that could lead to increased $SO_2$ conversion to acid.

Hazardous Air Pollutants

HAPs in synfuel have been evaluated by others through testing and generally determined that they fall within the same ranges as that for the parent coals.

Mean concentrations for mercury, arsenic, vanadium, and other trace metals in latex have been shown to be consistently lower than that for the base coals, which would result in lower concentrations in the synfuel as well, especially when compared on an equivalent heat input rate basis. This also holds true for the mean concentrations of the halogens chloride and fluoride, which result directly in emission of hydrochloric and hydrofluoric acids.

It is extremely unlikely that the use of synfuel as an alternate to coal will result in any increase in HAP emissions over the use of base coal alone.

**Agency Approvals of Synfuel**

IPSC has found that synfuel has been reviewed by at least twenty environmental regulatory agencies, including Utah's DAQ. Many have required permitting for the production of synfuel itself, which IPSC does not propose to do here. However, we can find only two instances where states have inserted the approval of the use of synfuel as a fuel within the language of specific permits, with Utah being one of those.

The treatment of synfuel by the Environmental Protection Agency in other regions is particularly interesting. Formal correspondence on this matter indicates that the EPA does not consider the use of synfuel a modification under Title V and hence, would also not be a modification under New Source Review. EPA did not require changes in permitting. UDAQ staff has the same information on file.

Historically, the EPA has long recognized the close similarity of coal-derived synthetic fuels to parent coals. In fact, after the push for energy alternatives in the 1970's, EPA included synfuel within the definitions for coal in later regulatory actions.

Additionally, coal is classified by ASTM D388-98A as required by both the EPA and state agencies. The synfuel proposed to be used by IPSC is within the classification ranges for the base coal.

**Conclusion**

The use of synfuel as an alternate to coal as proposed by IPSC has been shown through this discussion and other references to be virtually identical, if not less of an impact regarding emissions of pollutants. Permit changes are not required because other agencies recognize the close similarity of synfuel with the base coal.

**Recommendation**

IPSC requests that UDAQ provide a determination on the use of synfuel as an alternate to coal in this case as presented by this and previous correspondence. We recommend that UDAQ find that synfuel is within the definition of coal when produced with the same base coal already approved by permit. Our recommendation is founded within the realm of literature currently available and on hand by UDAQ and the other agencies involved in similar determinations.

The recommendation proposed herein applies specifically to Condition 17 in AO # DAQE-AN0327009-04 and descriptions II.A.1 and II.A.2 of Special Provisions II.A. of IPSC's Title V permit #2700010002, whereas the term "coal" should be recognized to include synfuel.

Should you require any further information, please contact Mr. Dennis Killian, Superintendent of Technical Services, at (435) 864-4414, or by e-mail to dennis-k@ipsc.com.

**Title V Permit and Approval Order**

Inasmuch as this notice of intent may affect our Title V Operating Permit, I hereby certify that, based on information and belief formed after reasonable inquiry, the statements and information in this document are true, accurate, and complete.

Cordially,

George W. Cross

George W. Cross
President, Chief Operations Officer and Title V Responsible Official

BP/RJC:cp

cc: Blaine Ipson, IPSC
Bruce Moore, LADWP CES
James Holtkamp, LLG&M
Lynn Banks, IPSC
Eric Tharp, LADWP